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Online health information use among hail city residents: A look into e-health literacy

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Abstract

In the context of the rapidly growing availability of online health information, this study explores how adults search for and evaluate such content, focusing on the impact of demographic factors on these processes and the implications for personal health decision-making. A comprehensive survey involving 702 participants provided insights into consent rates, demographic trends, and behaviors related to online health information engagement. The findings revealed that while most adults are comfortable with finding and using health-related information online, they experience difficulty in judging its reliability and discerning underlying commercial interests. Search engines and official websites emerged as key sources of information. The study also uncovered variations in how individuals perceive online health information's reliability and ability to use it effectively, which points to a broader need for improving digital health literacy. Given the high willingness to participate in the study and the dominant use of digital sources for health information, especially among women and adults aged 25-34, the research underscores the necessity of enhancing critical evaluation skills for internet users. This could be achieved through targeted educational initiatives to strengthen health literacy, and support informed decision-making regarding health matters.

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Introduction

The digital era has ushered in transformative changes across various fields, with technology playing a central role (Alalawi *et al.*, 2021; Ali and Arshad, 2016; Anandhi and Sathiamoorthy, 2023; Xefteris, 2021). In no domain is the impact of technology more evident than in healthcare, where Health Information Technology (HIT) has become increasingly prevalent (Idachaba and Idachaba, 2012). The undeniable influence of HIT on our daily lives underscores the critical importance of digital health literacy. As HIT adoption continues to grow among healthcare professionals and the general population, the need for proficient skills and knowledge to harness its potential becomes paramount.

Digital health literacy, also known as eHealth literacy, encompasses a set of essential skills required to effectively search, comprehend, evaluate, and utilize health information from electronic sources. In this rapidly evolving healthcare landscape, understanding the competencies linked with digital health literacy are of paramount importance.

Norman and Skinner introduced the concept of eHealth literacy, highlighting its pivotal role in health information acquisition and application (Norman and Skinner, 2006). Neter and Brainin emphasized its significance in patient engagement and informed decision-making (Neter and Brainin, 2012). Paakkari delved into interactive literacy, focusing on digital communication with healthcare stakeholders (Paakkari and Paakkari, 2012). In contrast, Chung and Nahm underscored the importance of critical literacy for making informed health decisions (Chung and Nahm, 2015). Foundational skills, such as using search engines and navigating health websites, were highlighted by Gilstad (2014). Additionally, the importance of sourcing accurate and reliable health information was stressed by a group of researchers (Diviani *et al.*, 2015).

Demographics also play a role in digital health literacy, as observed by Norgaard and his colleagues (Norgaard *et al.*, 2015). Motivation and self-confidence were identified as factors influencing engagement with digital health resources (Norgaard *et al.*, 2015). Mitsutake *et al.* cautioned against the repercussions of low digital health literacy (Mitsutake *et al.*, 2016). Mackert *et al.* (2016) and Zarcadoolas *et al.* (2013) advocated for educational interventions and user-friendly health platforms, respectively (Mackert *et al.*, 2016; Zarcadoolas *et al.*, 2013).

The rise of the internet has revolutionized the landscape of health information access and seeking behaviors. In Saudi Arabia, multiple studies have indicated widespread technology adoption among the population, as reported by Alhur and Alhur (2022), and Alhur (2023). Moreover, a study revealed that a majority of internet users in Saudi Arabia had sought health information online (Fox and Duggan, 2013). Results linked online health searches to symptom onset or impending medical visits (Powell *et al.*, 2011). Lambert and Loiselle in 2007 identified primary motivations for online health searches (Lambert and Loiselle, 2007). However, concerns about the quality and reliability of online health information have been raised by researchers like Eysenbach and Köhler (2002) and Diviani *et al.* (2015) (Cotten and Gupta, 2004).

This study is designed to explore the competencies in digital health literacy and the patterns of web-based health information-seeking among Hail City, Saudi Arabia residents. The research has several goals: to measure the prevailing levels of digital health literacy, to determine how demographic variables affect these literacy levels, to investigate the motivations and practices behind seeking health information online, and to assess the credibility and use of different online health information sources. Additionally, the research aims to identify deficiencies in digital health literacy skills and propose strategies to enhance digital health literacy and the availability of trustworthy online health information. The ultimate objective of this research is to deepen our understanding of the influence of digital health literacy on the use and interpretation of health information, which can inform the design of future health interventions and potentially improve health outcomes for the Hail City population.

Materials and methods

Research framework

This study employs a quantitative research framework to investigate individuals' digital health literacy and internet-based health information-seeking behaviors in Hail City. The quantitative approach provides a solid structure for examining the widespread patterns within this field.

Sampling strategy

A random sampling technique was utilized to obtain a diverse and representative sample of the adult Saudi population, focusing on individuals aged 18 years and older. This method ensures that the sample is inclusive and pertinent to the research objectives.

Data collection

Data was gathered through online surveys, a method that is congruent with the digital nature of the research topic and offers an insightful glimpse into the participants' digital health literacy and their behaviors in seeking health information online. This method provides a direct link to the participants' experiences, thereby enriching the quality of the data collected.

Instrumentation

The research instrument is a carefully crafted questionnaire based on established constructs customized by our research team to better align with the study's specific aims. This customization ensures that the data collected is directly relevant to our research questions.

Analytical techniques

Following data collection, we conducted a detailed analysis using statistical methods to calculate measures such as mean, median, mode, and standard deviation. These statistical analyses reveal significant trends and correlations, setting the stage for well-founded conclusions. A pilot study was also conducted to validate the reliability and validity of our research instrument and the robustness of our data.

Ethical considerations

The Ethical Approval Committee from the Research Department at Hail Health Cluster No. 2023-119 approved the study. The research was conducted with strict adherence to ethical standards. Informed consent was obtained from all participants, who were fully briefed on the purpose and procedures of the study. Our methodology was firmly centered on protecting participants' rights and ensuring their data's confidentiality and integrity.

Results and discussion

The consent to participate in the study was overwhelmingly positive. Out of the 702 participants who were approached, a near-unanimous 99.6% (n=699) agreed to participate (Table 1). Only a negligible 0.4% (n=3) of participants opted to disagree with the participation agreement. This high level of agreement suggests that the participants were largely willing and interested in contributing to the study, indicating a strong engagement with the subject matter and the research process.

Table 1. Participation agreement

Response	Frequency	Percent
Agree	699	99.6
Disagree	3	.4
Total	702	100

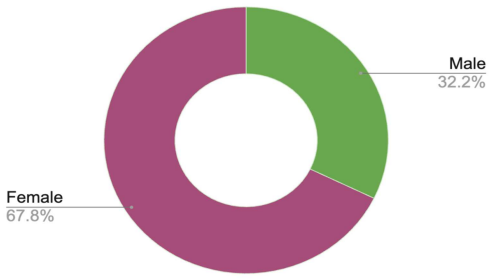

Fig. 1. Gender distribution

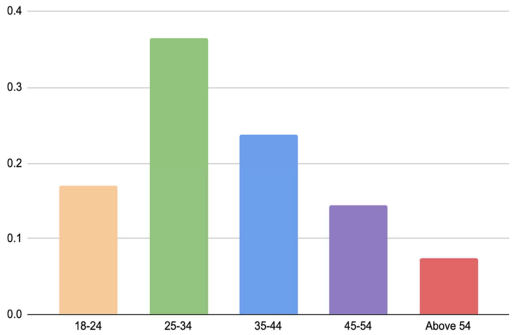

Fig. 2. Age distribution

Table 2. Ease and difficulty of online health information search and assessment

Item	Very Easy (Freq. %)	Easy (Freq. %)	Difficult (Freq. %)	Very Difficult (Freq. %)	Total (Freq. %)	Mean	Std. Dev.
1. Ease of online health searches	163; 23.2%	365; 52.0%	144; 20.5%	30; 4.3%	702; 100.0%	2.058405	0.778276
2. Using correct health-related terms	158; 22.5%	385; 54.8%	137; 19.5%	22; 3.1%	702; 100.0%	2.032764	0.738436
3. Locating precise health information	126; 17.9%	359; 51.1%	185; 26.4%	32; 4.6%	702; 100.0%	2.175214	0.771689
4. Formulating health-related questions	129; 18.4%	344; 49.0%	189; 26.9%	40; 5.7%	702; 100.0%	2.199430	0.801283
5. Articulating health opinions in writing	130; 18.5%	327; 46.6%	201; 28.6%	44; 6.3%	702; 100.0%	2.226496	0.819682
6. Ensuring comprehension by recipients	119; 17.0%	331; 47.2%	210; 29.9%	42; 6.0%	702; 100.0%	2.2493	0.804210
7. Deciding information reliability	91; 13.0%	227; 32.3%	261; 37.2%	123; 17.5%	702; 100.0%	2.592593	0.923216
8. Identifying commercial interests	106; 15.1%	257; 36.6%	246; 35.0%	93; 13.2%	702; 100.0%	2.464387	0.903796
9. Deciding information applicability	106; 15.1%	318; 45.3%	213; 30.3%	65; 9.3%	702; 100.0%	2.337607	0.843695
10. Applying information in daily life	112; 16.0%	337; 48.0%	190; 27.1%	63; 9.0%	702; 100.0%	2.290598	0.840078
11. Making health decisions based on info	106; 15.1%	363; 51.7%	178; 25.4%	55; 7.8%	702; 100.0%	2.259259	0.807256

Fig. 1 indicated that the demographic breakdown of the participants revealed a significant gender disparity. Of the individuals surveyed, a minority of 32.2% were male, while majorities of 67.8% were female. This uneven distribution suggests a higher female engagement or interest in the subject matter of the study or possibly a reflection of the sampling method.

In terms of age distribution, the participants varied across a spectrum of adult age groups. The majority of participants fell within the 25-34 age range, accounting for 36.5% of the total. This was followed by the 35-44 age group, which comprised 23.8% of the participants. Young adults aged 18-24 represented 17% of the sample, indicating a fair level of engagement among younger individuals (Fig. 2).

Participants aged 45-54 made up 14.4% of the sample, showing a decrease in participation among middle-aged adults. Notably, only 7.4% of participants were above the age of 54, suggesting a lower representation or possibly lower accessibility or interest in the study's focus among older adults.

Table 3. Responses to health information utilization and perceptions

Item	Response	Frequency	Percent (%)	Mean	Std. Deviation
Leveraging for Commercial Benefit	YES	238	33.9	2.336182	0.911694
	NO	200	28.5		
	Maybe	264	37.6		
	Total	702	100		
Effective Use for Personal Purposes	YES	281	40	1.941595	0.845427
	NO	181	25.8		
	Maybe	240	34.2		
	Total	702	100		
Perceived Reliability	YES	207	29.5	2.081197	0.860121
	NO	231	32.9		
	Maybe	264	37.6		
	Total	702	100		
Consistency of Information on the Internet	YES	341	48.6	1.786325	0.815656
	NO	170	24.2		
	Maybe	191	27.2		
	Total	702	100		
Use for Health-related Decisions	YES	260	37	1.957265	0.844508
	NO	212	30.2		
	Maybe	230	32.8		
	Total	702	100		

Online health information search and assessment

The study assessed the ease with which participants could search for and evaluate online health information across various dimensions. As seen from Table 2 below, the majority of participants found searching for health information online to be easy (52.0%, n=365) or very easy (23.2%, n=163). However, a significant minority reported difficulty (20.5%, n=144) or found it very difficult (4.3%, n=30, Moreover, over half of the respondents (54.8%, n=385) easily used correct health-related terms, with an additional 22.5% (n=158) finding it very easy. Fewer participants struggled with this task (19.5%, n=137) or found it very difficult (3.1%, n=22). Locating precise information was easy for 51.1% (n=359) of the sample and very easy for 17.9% (n=126). However, 26.4% (n=185) found it difficult, and 4.6% (n=32) found it very difficult. Furthermore, regarding the item concerned with formulating health-related questions, our result shows that nearly half of the participants (49.0%, n=344) easily formulated health-related questions, with 18.4% (n=129) finding it very easy. A notable proportion found it difficult (26.9%, n=189) or very difficult (5.7%, n=40).

Articulation of health opinions in writing was easy for 46.6% (n=327) and very easy for 18.5% (n=130), while 28.6% (n=201) found it difficult and 6.3% (n=44) very difficult. Also, ensuring that recipients understood the information was easy for 47.2% (n=331) and very easy for 17.0% (n=119). However, 29.9% (n=210) found it difficult, and 6.0% (n=42) found it very difficult.

Only 13.0% (n=91) found it very easy to decide on the reliability of information, while 32.3% (n=227) found it easy. A larger proportion found this task to be difficult (37.2%, n=261) or very difficult (17.5%, n=123). Additionally, identifying commercial interests in health information was easy for 36.6% (n=257) and very easy for 15.1% (n=106), but 35.0% (n=246) found it difficult and 13.2% (n=93) very difficult. Also, deciding on the applicability of information was easy for 45.3% (n=318) and very easy for 15.1% (n=106). However, 30.3% (n=213) reported difficulty, and 9.3% (n=65) found it very difficult. A plurality of participants found applying information to daily life easy (48.0%, n=337) or very easy (16.0%, n=112). The task was difficult for 27.1% (n=190) and very difficult for 9.0% (n=63). A majority reported that making health decisions based on information was easy (51.7%, n=363) or very easy (15.1%, n=106). Some found it difficult (25.4%, n=178) or very difficult (7.8%, n=55).

The researchers examined participants' responses to various aspects of health information utilization and their perceptions of its benefits and reliability. A total of 33.9% (n=238) of participants indicated that they leverage health information for commercial benefit, while 28.5% (n=200) do not, and 37.6% (n=264) were uncertain ('Maybe') (Table 3). The mean score for this item was 2.336 with a standard deviation of 0.912, indicating moderate agreement with the statement.

For the effective use of health information for personal purposes, 40% (n=281) responded affirmatively, 25.8% (n=181) negatively, and 34.2% (n=240) were undecided. The mean response was 1.942, with a standard deviation of 0.845, suggesting that participants tend to agree that they use health information effectively for personal purposes.

When asked about the perceived reliability of health information, 29.5% (n=207) agreed that it is reliable, 32.9% (n=231) disagreed, and 37.6% (n=264) were unsure. The mean score was 2.081 with a standard deviation of 0.860, reflecting a general uncertainty regarding the reliability of health information.

Nearly half of the participants (48.6%, n=341) agreed that health information on the internet is consistent, whereas 24.2% (n=170) disagreed, and 27.2% (n=191) were ambivalent. The mean score for this item was 1.786, with a standard deviation of 0.816, indicating a tendency among participants to view online health information as consistent.

Regarding the use of health information for making health-related decisions, 37% (n=260) of participants agreed that they do so, 30.2% (n=212) disagreed, and 32.8% (n=230) were uncertain. The mean score was 1.957 with a standard deviation of 0.845, suggesting that participants are generally positive about using health information for decision-making purposes.

Our result revealed that 48.3% of participants primarily use search engines for health information, indicating a strong preference for online searches. Websites of public bodies are also significant, with 27.9% usage, underscoring trust in official sources. Wikipedia (7%), social media, and YouTube (each 8.4%) are less common but notable for their role in disseminating health content, reflecting a trend towards diverse, digital information-seeking behaviors as seen in Fig. 3.

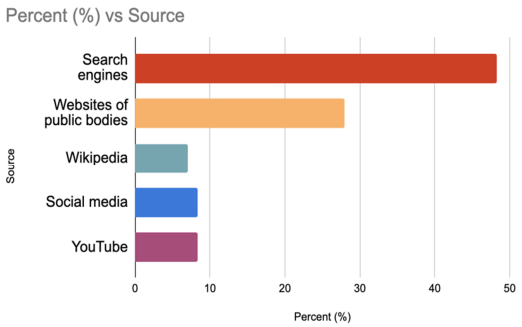

Fig. 3. Sources used for obtaining health-related information

Our study's high consent rate (99.6%) is consistent with the literature indicating that individuals are generally willing to participate in health-related research, recognizing its importance for advancing medical knowledge and improving healthcare

outcomes (McElfish *et al.*, 2018). The demographic distribution, with a significant majority of female participants (67.8%), aligns with findings from Boulton and Fitzpatrick (1994), who reported that women are more likely to engage in health research, potentially reflecting gender differences in health concerns or the influence of the sampling method (Boulton *et al.*, 1996).

The age distribution in our study, with a higher representation of younger adults, particularly those aged 25-34, may reflect the digital nature of the study and the relevance of the topic to this age group. This is supported by the work of Kontos *et al.* (2014), who found that younger adults are more inclined to use digital means to access health information due to their familiarity and comfort with technology (Kontos *et al.*, 2014).

Participants' ease with online health information search and assessment varied, with a majority finding it easy to search for health information and use correct health-related terms. However, a significant minority experienced difficulty, especially with tasks requiring higher cognitive skills, such as evaluating the reliability of information and identifying commercial interests. This finding echoes the concerns raised by Eysenbach and Köhler (2002), who argue that the ability to assess online health information critically is a key component of health literacy yet remains a challenge for many individuals (Eysenbach and Köhler, 2002).

The moderate agreement on leveraging health information for commercial benefit and the general positive stance on using health information for personal purposes and decision-making reflects recognition of the potential of online health information to influence health behaviors, as discussed by Viswanath and Kreuter (2007). However, the variability in responses highlights the need for improved digital literacy, as suggested by Norman and Skinner (2006), to ensure that individuals can effectively navigate and evaluate health information online.

The reliance on search engines and official websites as primary sources for health information suggests a trend towards digital sources, with traditional and authoritative sources being preferred. However, the utilization of Wikipedia, social media, and YouTube indicates that participants are also turning to easily accessible and potentially less reliable sources. This underscores the need for improved digital literacy and critical appraisal skills among health information seekers, as the quality of health information on these platforms can be variable (Tan and Goonawardene, 2017).

Our findings suggest that while the digital age has provided abundant access to health information, the skills to navigate and assess this information critically are not uniformly distributed among the population. This calls for targeted educational interventions to improve health literacy, particularly in the critical evaluation of online health information, to ensure informed decision-making in health-related matters.

Conclusion

This study reveals that people are highly interested in health information online, with a significant number of participants willing to participate in the research. Women and younger adults are more engaged in seeking health information online. Our findings show that most people prefer using digital sources like search engines and official websites for health information. However, many individuals struggle to critically assess the reliability and relevance of online information, especially in identifying commercial interests and ensuring a clear understanding of health messages. In light of these findings, there is a clear need for improved health literacy, particularly in digital skills and critical thinking. Empowering individuals with these skills is crucial for making informed health decisions in the digital age. Healthcare providers, educators, and policymakers play vital roles in promoting these competencies among the public as the Internet continues to be a primary source of health information.

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